

REMARKS

Claims 1, 19 and 20 have been amended. Claims 2-5 have been canceled. New Claims 21-22 have been added. Thus, claims 1 and 6-22 are now presented for examination. Claims 1 and 19 as amended incorporate the subject matter of canceled claims 3 to 5, and to recite "a molar ratio of 80:20 to 70:30". Support for these amendments may be found in original claims 2-5 and in Examples 1 and 3 of the present specification. The amendment to claim 20 corrects a spelling error. Support for the new claims can be found at page 11, line 25. Thus, no new matter has been added. Reconsideration and withdrawal of the present rejection in view of the comments presented herein are respectfully requested.

Rejection under 35 USC 103(a)

Claims 1-20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Uetani et al. (US 6,627,381) in view of Yamamoto et al. (U.S. 7,005,230) and Nakanishi et al. (US 2002/0164540).

The Examiner alleges that it would have been prima facie obvious to use a copolymer having a weight average molecular weight between 5,000-20,000 in view of Yamamoto et al. and Nakanishi et al. and having a polydispersity of 1-3, and reasonably expect the same or similar results as recited in Uetani et al. for a photoresist composition which is excellent in sensitivity, resolution and dry etch resistance. However, as discussed below, this combination of references does not render the present claims obvious.

The foreign priority date of the present application is **December 26, 2002**. Enclosed herewith is a copy of a certified translation of the Japanese priority application (JP 2002-376294), filed on December 26, 2002. The only notable difference between the present application and the priority application is that the present application contains Example 3. There are only a few other minor differences. Although claim 1 of the Japanese patent application recites "a weight average molecular weight" instead of "a weight average molecular weight of the copolymer prior to protection" as recited in claim 1, paragraph [0023] of the Japanese Patent Application discloses "the weight average molecular weight of the copolymer prior to protection." Thus, all of the pending claims are supported by the Japanese Patent Application and are therefore entitled to the December 2, 2002 priority date.

The Yamamoto et al. patent cited by the Examiner was granted on a U.S. application filed on January 16, 2003, which is after the priority date of the present application. Thus, this references cannot qualify as prior art under 35 USC §102(e). None of the other subsections of 35 USC 102 is applicable. Thus, the cited Yamamoto reference does not qualify as prior art against the present application.

Since the Examiner's rejection relied on the Yamamoto et al. reference as prior art, the removal of the Yamamoto et al. reference as prior art overcomes any *prima facie* showing of obviousness. Moreover, additional limitations have been added to the claims, further distinguishing these claims over the cited references. In particular, new Claims 20 and 21 recite a weight average molecular weight range of 4000 or more and 8000 or less. A weight average molecular weight within this range is neither disclosed nor suggested by either the Uetani or the Nakanishi references remaining in the rejection. Thus, new Claims 20 and 21 are patentable for this additional reason.

Furthermore, if a *prima facie* showing of obviousness had been set forth, the combination of features recited in the presently pending claims provides unexpected results that would overcome any such showing. In particular, present claims 1 and 19, and all of the claims dependent thereon, include the following features:

1. the weight average molecular weight (Mw) range of 2,000 or more and 8,500 or less; and
2. the molar ratio between the hydroxystyrene units (a1) and the (meth)acrylate ester units (a2) containing an adamantyl group with an alcoholic hydroxyl group within the range of 80:20 to 70:30.

The combination of these two elements unexpectedly prevents the generation of microbridges without deteriorating the etching resistance and heat resistance. *See*, Applicants' specification at page 11, line 20 to page 12, line 3. Example 1, beginning on page 21 of Applicants' specification, describes the results achieved using a component (A) having a weight average molecular weight of 8,000, and molar ratio of 80:20). As described at page 23, lines 8-18, a resist hole pattern was formed using the composition of Example 1 and tested using a surface defect inspection apparatus. Only a very small number of surface defects were identified, favorable hydrophilicity was obtained and excellent resolution was achieved.

In contrast to the excellent results achieved using the composition of Example 1, the comparative examples using compositions outside of the claimed parameters achieved much less favorable results. Comparative Examples 1 and 2, beginning on page 23 and 24, respectively, of the specification made use of a component (A) having a weight average molecular weight of 9,000 and a molar ratio of 100:0. Comparative Example 3, beginning on page 24 used a weight average molecular weight of 11,000 and a molar ratio of 80:20. As described in the specification, the results achieved using these compositions outside of the claimed range were quite poor. The level of hydrophilicity was low and that resolution became inadequate at a line width of 120nm or above. Moreover, many defects were observed. In fact, the level of defects observed using Comparative Example 3 was so high that other properties could not even be evaluated. *See*, Specification at page 25, lines 12-19.

These advantageous, unexpected effects could not have been predicted based on any of the cited references, either alone or in combination, and are strong evidence of the patentability of the claimed invention. Thus, these unexpected results would effectively rebut any finding of *prima facie* obviousness.

In view of the comments presented above, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. 103(a).

CONCLUSION

Applicants submit that all claims are now in condition for allowance. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 1/14/08

By: 

Neil S. Bartfeld, Ph.D.
Registration No. 39,901
Agent of Record
Customer No. 20,995
(619) 235-8550